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STUDENT BOOK:	**Chapter 11, pp. 340–347**
CONCEPTS:	GEOMETRIC LINES
	PROJECTIONS
METHOD:	OBSERVATION

CURVES AND LINES

Certain drawings are produced by the clever use of lines and shapes, giving the impression that they are distorted. They are known as optical illusions, or geometric illusions, and they give rise to misrepresentations of size, angle, curve, perspective and so on. In this activity, you will see a few drawings of different geometric shapes. You are to measure them to determine what is illusion and what is not.

IDENTIFYING THE OBSERVATION CRITERIA

Read pp. 340–347 in your student book for help in answering questions 1–5.

1. Name three possible ways of producing a technical drawing.

2. Name the lines that can be drawn using drafting instruments and the rules of geometry.

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3. Provide two examples of optical illusion drawings that you have seen before. Think, for example, of those you may have seen on posters or clothing.

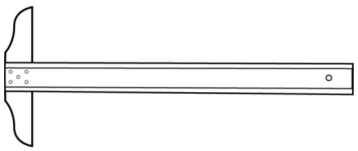
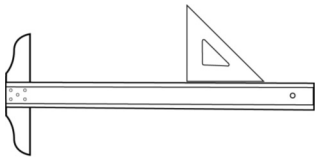
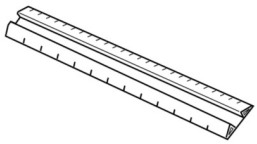
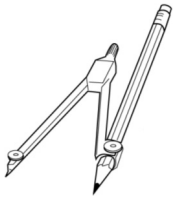
_____

_____

_____

_____

4. Complete the following table with the names of the drafting instruments needed to verify certain elements of the drawings.

Sketch	Name of instrument used	Function
	_____	Checks whether straight lines are horizontal and parallel to each other.
	_____ _____	_____ _____ _____
	_____ _____	Checks whether _____ lines are _____ to each other.
	_____	Checks the length of lines.
	_____	_____ _____

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ESTABLISHING AN OBSERVATION PROTOCOL

5. Make the following observations of the drawings in series A (p. 154). Record your results in the table on the next page as you go.

Drawing 1

- Spot the illusion by indicating which of the two horizontal lines looks longer.
- Check the length of these two lines and indicate whether one of them is really longer than the other.

Drawing 2

- Spot the illusion by indicating which of the two lines looks longer.
- Check the length of these two lines and indicate whether one of them is really longer than the other.

Drawing 3

- Spot the illusion by indicating which of the two black vertical lines marked A and B looks longer.
- Check the length of these two lines and indicate whether one of them is really longer than the other.

Drawing 4

- Spot the illusion by indicating which of the three horizontal lines looks longest.
- Check the length of these three lines and indicate whether any of them is really longer.

6. Make the following observations of the drawings of series B (p. 154). Record your results in the table on the next page as you go.

Drawing 1

- Spot the illusion by indicating whether the horizontal lines on the drawing look parallel or not.
- Check and indicate whether the horizontal lines are really parallel.

Drawing 2

- Spot the illusion by indicating whether the oblique lines of the drawing look parallel to each other.
- Check and indicate whether the oblique lines are really parallel.

Drawing 3

- Spot the illusion by indicating whether the horizontal lines look parallel to each other and whether the vertical lines look parallel to each other.
- Check the parallelism of the horizontal lines to each other and of the vertical lines to each other. Indicate whether they are really parallel.

Drawing 4

- Spot the illusion by indicating whether the lines forming the two ellipses point in the same direction.
- Check the direction of the lines and indicate whether they point in the same direction.

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7. Make the following observations of the drawings in series C (p. 155). Record your results in the table below as you go.

Drawing 1

- Spot the illusion by indicating whether the circles in the centre of the two groups look the same size.
- Check the size of the circles in the centre of the two groups and indicate whether one of them is really bigger than the other.

Drawing 2

- Spot the illusion by indicating whether the two circles look the same size.
- Check the size of the two circles and indicate whether one of them is really bigger than the other.

Drawing 3

- Spot the illusion by indicating whether the two white rectangles look the same size.
- Check the size of the two white rectangles and indicate whether one of them is really bigger than the other.

Drawing 4

- Spot the illusion by indicating whether the two squares are the same size.
- Check the size of the two squares and indicate whether one of them is really bigger than the other.

APPLYING THE OBSERVATION PROTOCOL

Table of results

Drawing No.	Illusion	Reality
Series A		
1	The horizontal line at the _____ looks longer than the one at the _____	The two horizontal lines are _____
2	_____	_____
	_____	_____
	_____	_____

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Table of results (*continued*)

Drawing No.	Illusion	Reality
Series A (*continued*)		
3		
4		
Series B		
1		
2		
3		
4		
Series C		
1		
2		

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Table of results (*continued*)

Drawing No.	Illusion	Reality
Series C (*continued*)		
3		
4		

REFLECTING ON YOUR APPROACH

8. Even though you knew the drawings were optical illusions, did you see illusions in all the drawings observed?

9. What do the drawings in each series have in common?

a) In series A?

b) In series B?

c) In series C?

10. How did you figure out the optical illusions in this activity?

11. In comparing your observations with those of your classmates:

a) Did you all notice the same types of illusions in the same drawings?

b) Did you all obtain the same results in measuring your drawings?

12. How could you improve your observation protocol?

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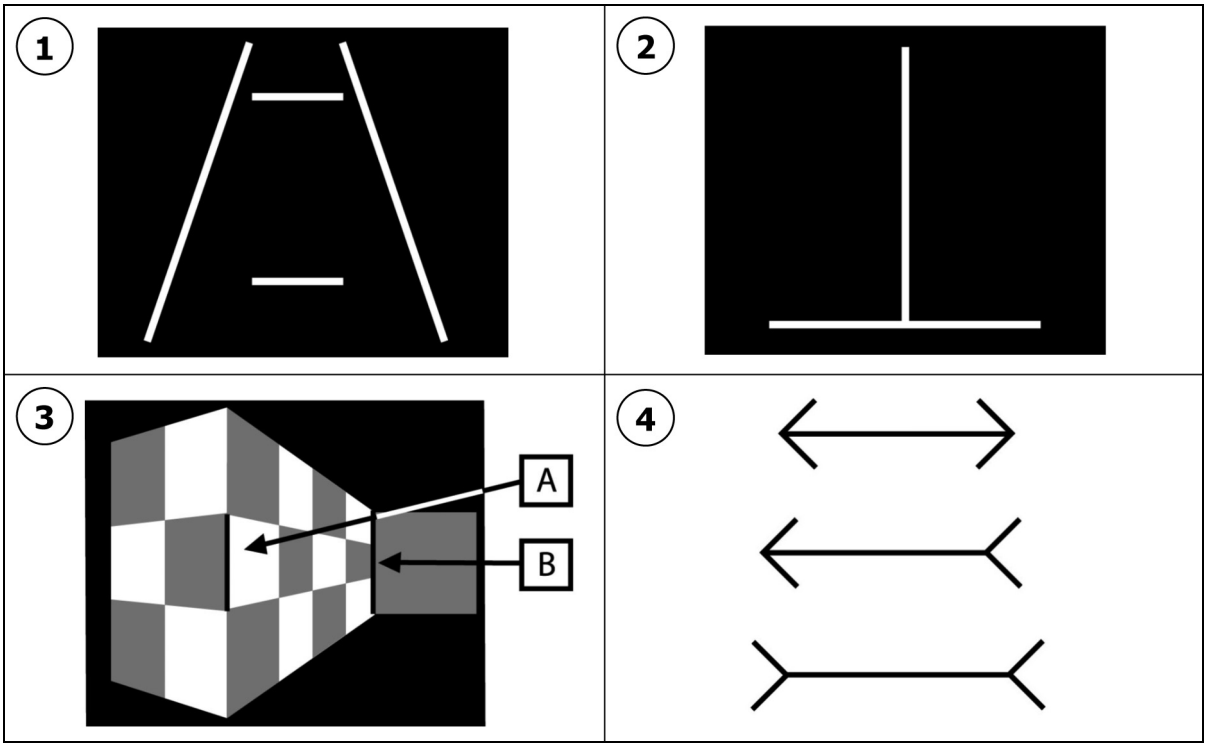
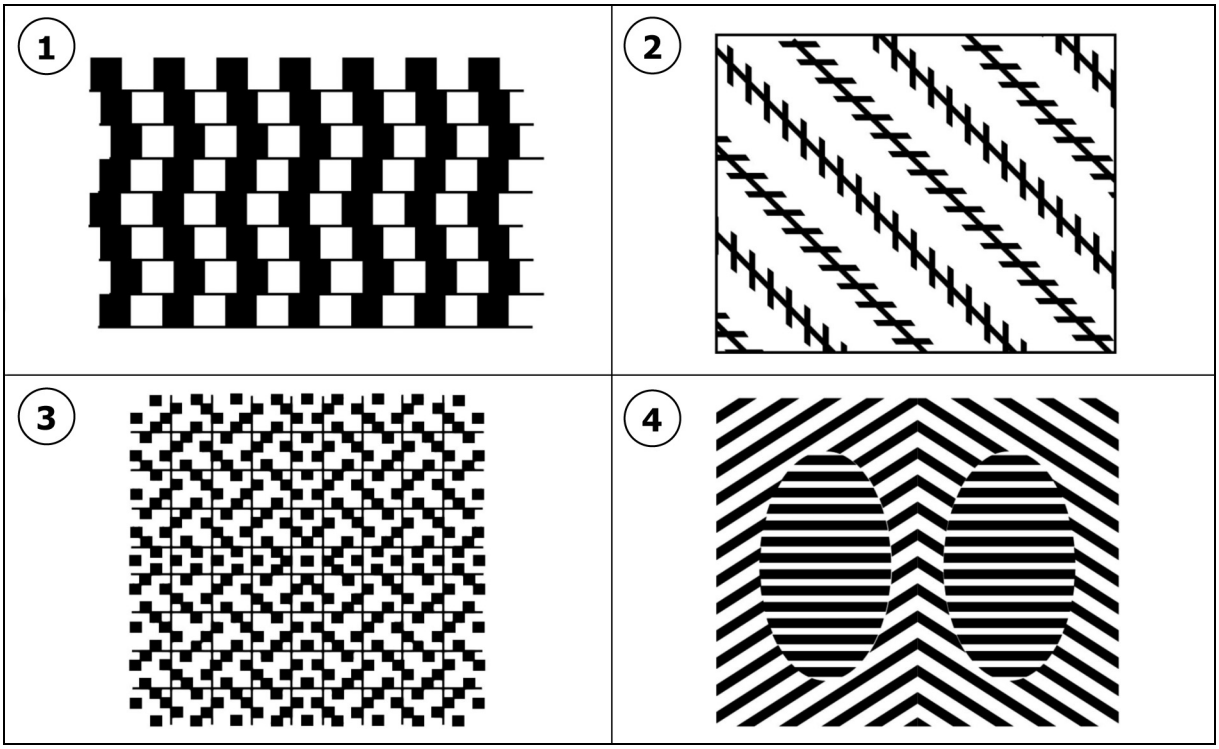
SERIES A



SERIES B



Name: _____ Group: _____ Date: _____

SERIES C